



**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

Kazuhiko NISHIMURA et al.

Serial No.: 10/082,177

Filed: February 26, 2002

For: PWM MOTOR DRIVING DEVICE

Group Art Unit: 2837

Examiner: Rina Duda

Atty. Docket No.: 103213-00044

**AMENDMENT UNDER 37 C.F.R. § 1.121**

**Introductory Comments**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

October 20, 2003

Sir:

In response to the Office Action dated June 20, 2003, the period for response being extended from September 20, 2003 until October 20, 2003 by the attached Petition for Extension of Time, please amend the above-identified application as set forth below.

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## **AMENDMENTS TO THE SPECIFICATION**

Applicants respectfully present the following replacement Abstract for consideration.

In a PWM motor driving device, the amount of electric power supplied to a motor is controlled by controlling the ON/OFF duty factor of output transistors connected between a power source and the motor. This motor driving device has phase detecting means circuits for detecting, among a plurality of phases of the motor, the phase which is currently being driven by the output transistors, and saturation preventing means circuits for performing control according to the voltage of the phase detected by the phase detecting means circuits in such a way that the output transistors are not saturated. Thus, the output transistors are controlled so as not to be saturated according to the voltage of, among the plurality of phases of the motor, the phase in which the motor is currently being driven by the output transistors. Thus, ~~for example,~~ when the upper output transistors are undergoing PWM switching, the lower output transistors are controlled so as not to be saturated no longer according to the voltage of the phase in which the motor is currently being driven by the upper output transistors as practiced conventionally. ~~This helps obtain better motor rotation characteristics.~~